

ABSTRACT OF THE DISCLOSURE

The present invention relates to arrays of biochemical and/or biofunctional elements such as nucleic acids (oligonucleotides, for example) or other biomolecules on a carrier surface and methods of producing such arrays using photoactivation of predetermined areas for synthesis using an illumination matrix that is computer-controlled to generate an exposure pattern. This exposure pattern can be adjusted and monitored by computer using a light sensor matrix, for example a CCD matrix, to allow precise, controlled illumination of specific regions and therefore attachment of array building blocks to those specific regions. The methods and compositions of the invention permit spatially resolved photochemical synthesis of polymer probes on a carrier.